

Subpart HHH—Standards of Performance for Synthetic Fiber Production Facilities

SOURCE: 49 FR 13651, Apr. 5, 1984, unless otherwise noted.

§ 60.600 Applicability and designation of affected facility.

(a) Except as provided in paragraph (b) of this section, the affected facility to which the provisions of this subpart apply is each solvent-spun synthetic fiber process that produces more than 500 megagrams of fiber per year.

(b) The provisions of this subpart do not apply to any facility that uses the reaction spinning process to produce spandex fiber or the viscose process to produce rayon fiber.

(c) The provisions of this subpart apply to each facility as identified in paragraph (a) of this section and that commences construction or reconstruction after November 23, 1982. The provisions of this subpart do not apply to facilities that commence modification but not reconstruction after November 23, 1982.

§ 60.601 Definitions.

All terms that are used in this subpart and are not defined below are given the same meaning as in the Act and in subpart A of this part.

Acrylic fiber means a manufactured synthetic fiber in which the fiber-forming substance is any long-chain synthetic polymer composed of at least 85 percent by weight of acrylonitrile units.

Makeup solvent means the solvent introduced into the affected facility that compensates for solvent lost from the affected facility during the manufacturing process.

Nongaseous losses means the solvent that is not volatilized during fiber production, and that escapes the process and is unavailable for recovery, or is in a form or concentration unsuitable for economical recovery.

Polymer means any of the natural or synthetic compounds of usually high molecular weight that consist of many repeated links, each link being a relatively light and simple molecule.

Precipitation bath means the water, solvent, or other chemical bath into which the polymer or prepolymer (partially reacted material) solution is extruded, and that causes physical or chemical changes to occur in the extruded solution to result in a semihardened polymeric fiber.

Rayon fiber means a manufactured fiber composed of regenerated cellulose, as well as manufactured fibers composed of regenerated cellulose in which substituents have replaced not more than 15 percent of the hydrogens of the hydroxyl groups.

Reaction spinning process means the fiber-forming process where a prepolymer is extruded into a fluid medium and solidification takes place by chemical reaction to form the final polymeric material.

Recovered solvent means the solvent captured from liquid and gaseous process streams that is concentrated in a control device and that may be purified for reuse.

Solvent feed means the solvent introduced into the spinning solution preparation system or precipitation bath. This feed stream includes the combination of recovered solvent and makeup solvent.

Solvent inventory variation means the normal changes in the total amount of solvent contained in the affected facility.

Solvent recovery system means the equipment associated with capture, transportation, collection, concentration, and purification of organic solvents. It may include enclosures, hoods, ducting, piping, scrubbers, condensers, carbon adsorbers, distillation equipment, and associated storage vessels.

Solvent-spun synthetic fiber means any synthetic fiber produced by a process that uses an organic solvent in the spinning solution, the precipitation bath, or processing of the spun fiber.

Solvent-spun synthetic fiber process means the total of all equipment having a common spinning solution preparation system or a common solvent recovery system, and that is used in the manufacture of solvent-spun synthetic fiber. It includes spinning solution preparation, spinning, fiber processing and solvent recovery, but does not include the polymer production equipment.

Spandex fiber means a manufactured fiber in which the fiber-forming substance is a long chain synthetic polymer comprised of at least 85 percent of a segmented polyurethane.

Spinning solution means the mixture of polymer, prepolymer, or copolymer and additives dissolved in solvent. The solution is prepared at a viscosity and solvent-to-polymer ratio that is suitable for extrusion into fibers.

Spinning solution preparation system means the equipment used to prepare spinning solutions; the system includes equipment for mixing, filtering, blending, and storage of the spinning solutions.

Synthetic fiber means any fiber composed partially or entirely of materials made by chemical synthesis, or made partially or entirely from chemically-modified naturally-occurring materials.

Viscose process means the fiber forming process where cellulose and concentrated caustic soda are reacted to form soda or alkali cellulose. This reacts with carbon disulfide to form sodium cellulose xanthate, which is then dissolved in a solution of caustic soda. After ripening, the solution is spun into an acid coagulating bath. This

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precipitates the cellulose in the form of a regenerated cellulose filament.

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§ 60.602 Standard for volatile organic compounds.

(a) On and after the date on which the initial performance test required to be conducted by § 60.8 is completed, no owner or operator subject to the provisions of this subpart shall cause the discharge into the atmosphere from any affected facility that produces acrylic fibers, VOC emissions that exceed 10 kilograms (kg) VOC per megagram (Mg) solvent feed to the spinning solution preparation system or precipitation bath. VOC emissions from affected facilities that produce both acrylic and nonacrylic fiber types shall not exceed 10 kg VOC per Mg solvent feed. VOC emissions from affected facilities that produce only nonacrylic fiber types shall not exceed 17 kg VOC per Mg solvent feed. Compliance with the emission limitations is determined on a 6-month rolling average basis as described in § 60.603.

§ 60.603 Performance test and compliance provisions.

(a) Section 60.8(f) does not apply to the performance test procedures required by this subpart.

(b) Each owner or operator of an affected facility shall determine compliance with the applicable standard in § 60.602(a) by determining and recording monthly the VOC emissions per Mg solvent feed from each affected facility for the current and preceding 5 consecutive calendar months and using these values to calculate the 6-month average emissions. Each calculation is considered a performance test. The owner or operator of an affected facility shall use the following procedure to determine VOC emissions for each calendar month;

(1) Install, calibrate, maintain, and operate monitoring devices that continuously measure and permanently record for each calendar month the amount of makeup solvent and solvent feed. These values shall be used in calculating VOC emissions according to paragraph (b)(2) of this section. All monitoring devices, meters, and peripheral equipment shall be calibrated and any error recorded. Total compounded error of the flow measuring and recording devices shall not exceed 1 percent accuracy over the operating range. As an alternative to measuring solvent feed, the owner or operator may:

(i) Measure the amount of recovered solvent returned to the solvent feed storage tanks, and use

the following equation to determine the amount of solvent feed:

Solvent Feed=Makeup Solvent+Recovered Solvent+Change in the Amount of Solvent Contained in the Solvent Feed Holding Tank.

(ii) Measure and record the amount of polymer introduced into the affected facility and the solvent-to-polymer ratio of the spinning solutions, and use the following equation to determine the amount of solvent feed:

$$\text{Solvent Feed} = \sum_{i=1}^n$$

(Polymer Used)_i × (Solvent-to-Polymer Ratio)_i

where subscript “i” denotes each particular spinning solution used during the test period; values of “i” vary from one to the total number of spinning solutions, “n,” used during the calendar month.

(2) VOC emissions shall be determined each calendar month by use of the following equations:

$$E = \frac{M_w}{S_w} - N - I \quad \text{and} \quad M_w = M_v S_p D$$

$$S_w = \frac{S_v S_p P}{1000} \quad I = \frac{I_E - I_S}{S_w}$$

where all values are for the calendar month only and where

E=Emissions in kg per Mg solvent feed;

S_v=Measured or calculated volume of solvent feed in liters;

S_w=Weight of solvent feed in Mg;

M_v=Measured volume of makeup solvent in liters;

M_w=Weight of makeup in kg;

N=Allowance for nongaseous losses per Mg solvent feed; (13 kg/Mg);

S_p=Fraction of measured volume that is actual solvent (excludes water);

D=Density of the solvent in kg/liter;

I=Allowance for solvent inventory variation or changes in the amount of solvent contained in the affected facility per Mg solvent feed (may be positive or negative);

I_S=Amount in kg of solvent contained in the affected facility at the beginning of test period, as determined by owner or operator;

I_E=Amount in kg of solvent contained in the affected facility at the close of test period, as determined by owner or operator.

(i) N, as used in the equation in paragraph (b)(2) of this section, equals 13 kg per Mg solvent feed to the spinning solution preparation system and precipitation bath. This value shall be used in all cases unless an owner or operator demonstrates

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to the satisfaction of the Administrator that greater nongaseous losses occur at the affected facility. In this case, the greater value may be substituted in the equation.

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§ 60.604 Reporting requirements.

(a) The owner or operator of an affected facility shall submit a written report to the Administrator of the following:

(1) The results of the initial performance test; and

(2) The results of subsequent performance tests that indicate that VOC emissions exceed the standards in § 60.602. These reports shall be submitted quarterly at 3-month intervals after the initial performance test. If no exceedances occur during a particular quarter, a report stating this shall be submitted to the Administrator semiannually.

(b) Solvent-spun synthetic fiber producing facilities exempted from these standards in § 60.600(a) (those producing less than 500 megagrams annually) shall report to the Administrator within 30 days whenever extruded fiber for the preceding 12 calendar months exceeds 500 megagrams.

(c) The requirements of this section remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternate means of compliance surveillance adopted by such State. In that event, affected sources within the State will be relieved of the obligation to comply with this section, provided that they comply with the requirements established by the State.

[49 FR 13651, Apr. 5, 1984, as amended at 55 FR 51384, Dec. 13, 1990; 59 FR 32341, June 23, 1994]